Grid Portals

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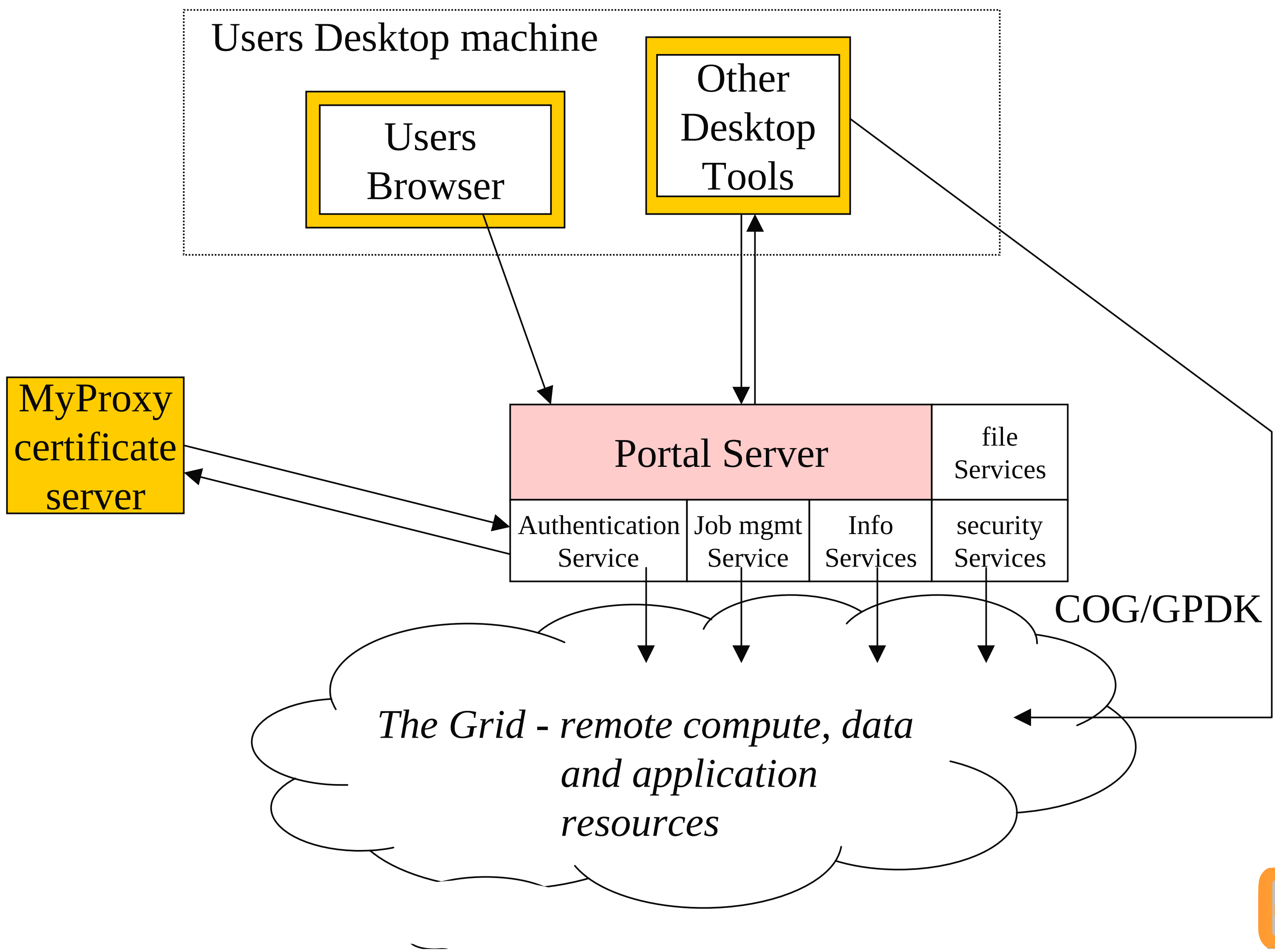
& GF/Java Grande Portals Group

IPG Workshop

Overview

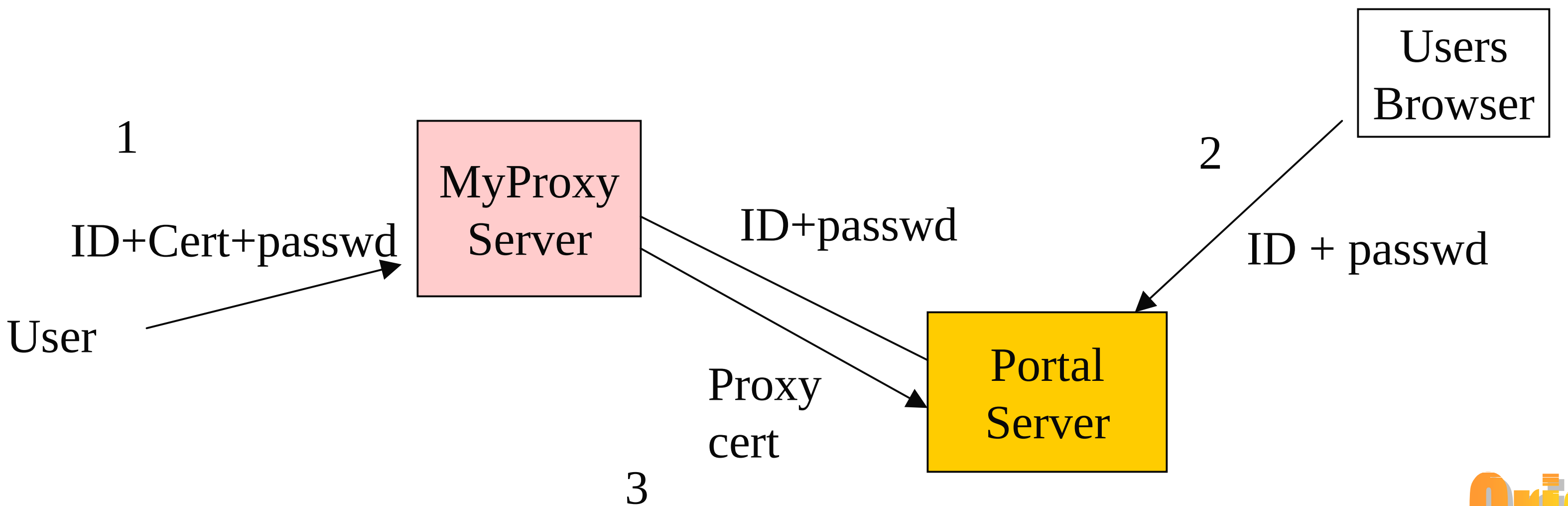
- Overview of “Standard” Portal Model
  - **Authentication Model.**
    - Collaboration between NCSA, NLANR, NPACI, NASA
  - **Job Launch model**
  - **Information access**
- Application Domain Portal
  - **Application Scripting**
  - **Experiment Archives**
  - **Shared Server Model & MyServer Model**
- Demo of Hot Page

“Standard” Portal Model



Portal Access/Authentication Model

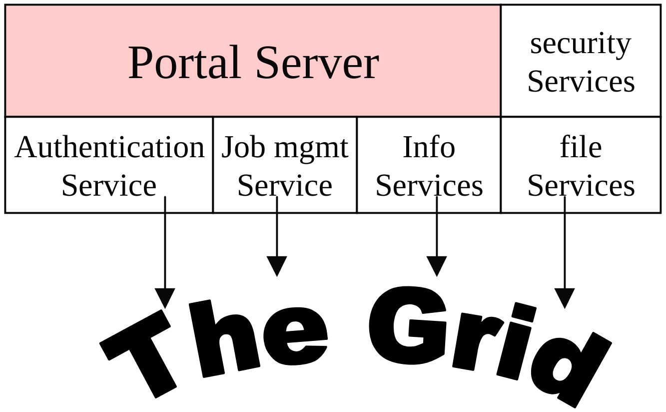
- Three Steps for Authentication
  - **1. Log into a globus client node and create a proxy cert that is stored in the MyProxy cert server with a one-time password.**
  - **2. Connect from a web browser to Portal Server and log in with temporary passwd.**
  - **3. Portal Server fetches your proxy from MyProxy Server.**



Grid Portals

Portal Services

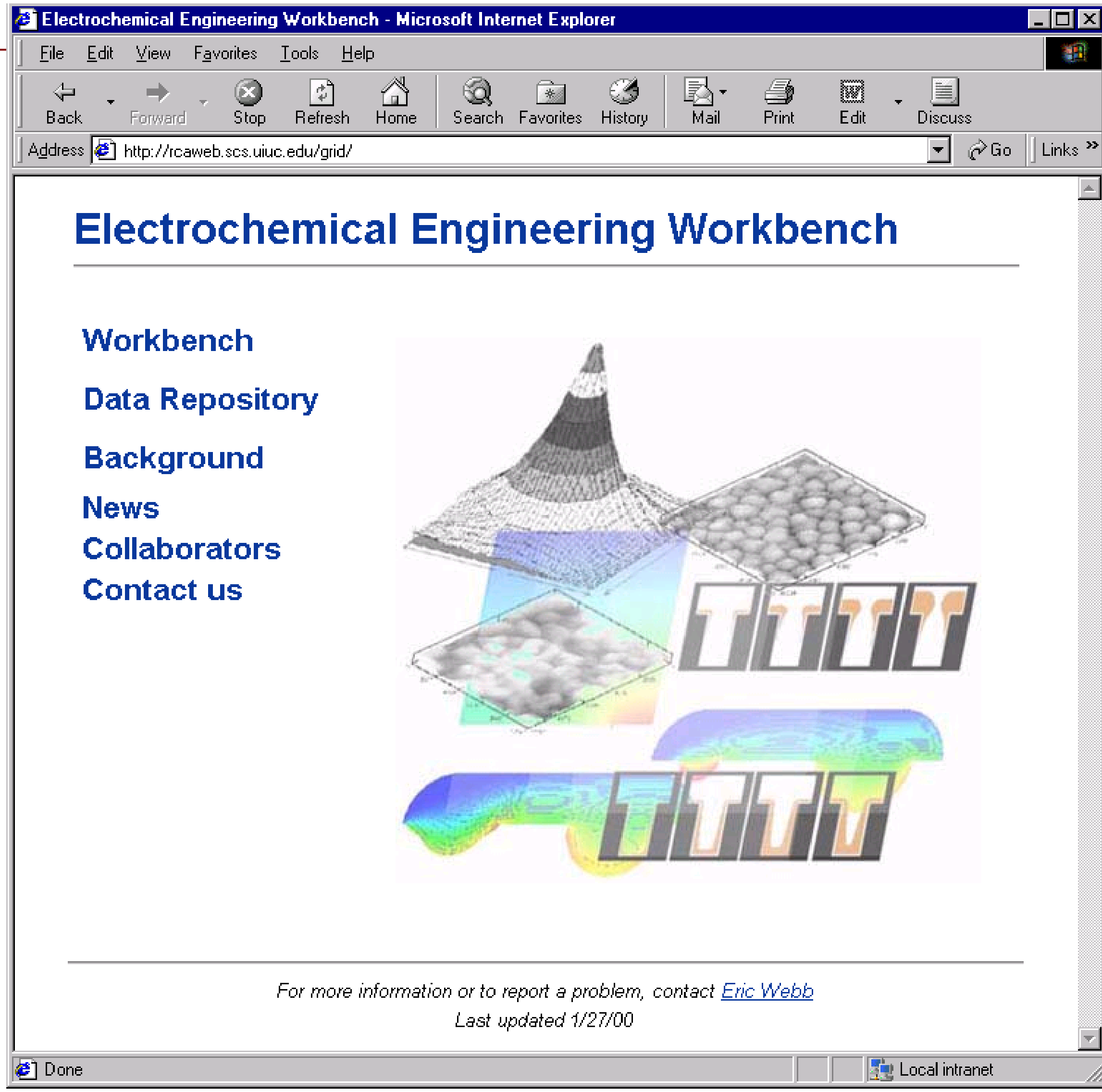
- The portal has web pages/servlets/scripts to
  - **Launch Jobs using globus**
  - **Consult grid information service**
  - **Manage Remote Files**
- Core Technologies:
  - **Argonne COG Kit**
  - **Jason's Grid Portal Beans**
  - **NPACI Hot Page Scripts**



Application Area Portals

- Objective
  - To provide a web-based environment for users of a class of related applications to
    - Execute the apps by filling in web form information such as
      - application parameter values
      - path to input files
    - ASP model: user doesn't care where it runs. Just wants it run fast.
  - The ability to compose apps or to script parameter studies
  - A Repository for managing experimental sessions.
  - Both collaborative version and MyServer version

An Example: NCSA Chem Engineering



Grid Portals

Presentation Project 3 - Microsoft Internet Explorer

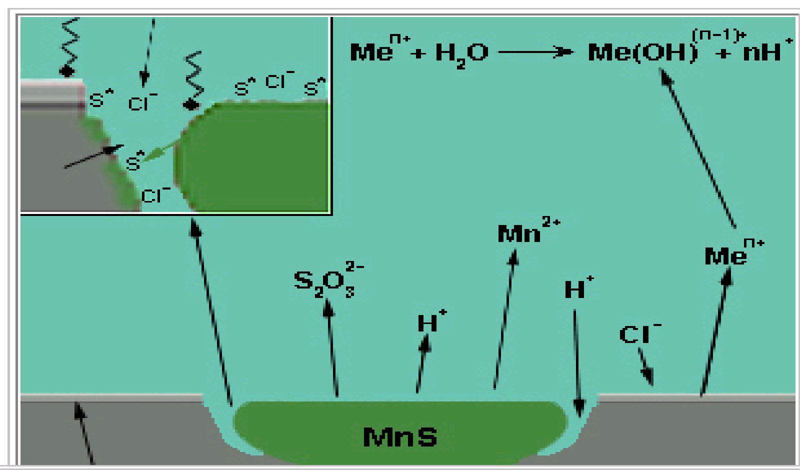
https://rcaweb.scs.uiuc.edu/gridsp3/presentp3.html

Project 3

Comprehensive Study of Electrochemical Processes

OBJECTIVE:

Inclusions are frequently present in alloys of structural metals such as stainless steel alloys, aluminum alloys, and nickel alloys, and have been identified as initiation sites for localized corrosion. Inclusions lead to initiation of pitting corrosion, which in turn may lead to crevice corrosion or stress corrosion cracking. The goal of Project 3 is to investigate numerically and experimentally the initiation processes at inclusions through the prediction and evaluation of concentrations and potential fields. Numerical modelling will be performed at multiple length scales from the nanoscale level of the passive film to the microscale level of the inclusions to the macroscale, for example reactor vessels. A user-friendly interface will allow you to define your problem and to run it on NCSA supercomputers. You will be able to visualize the results on your browser.

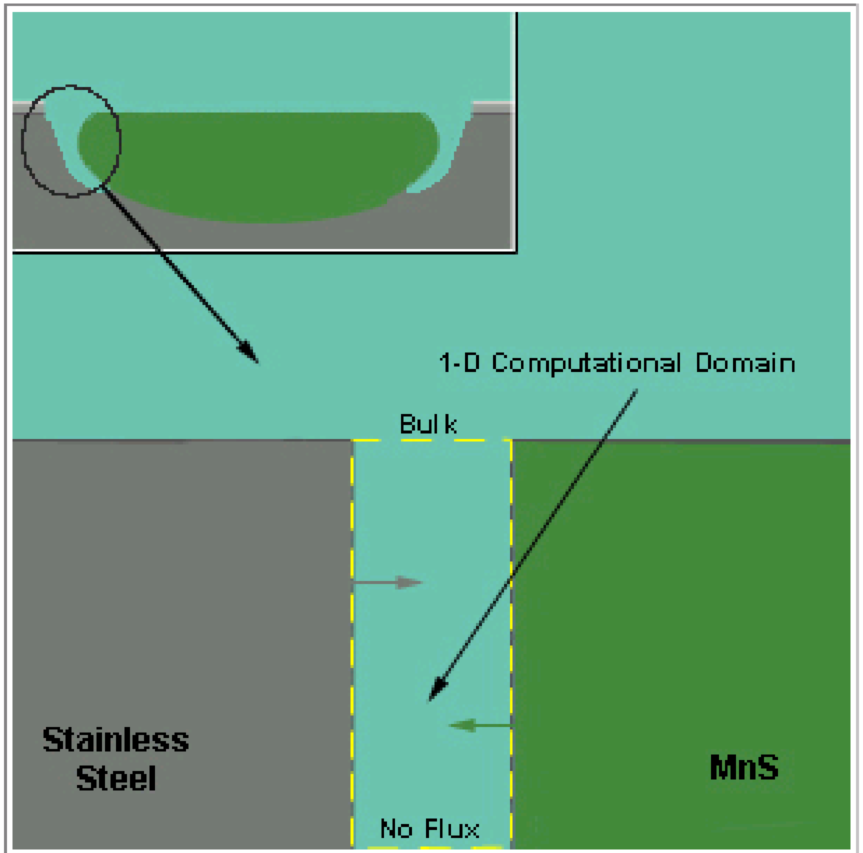


Done   Local intranet

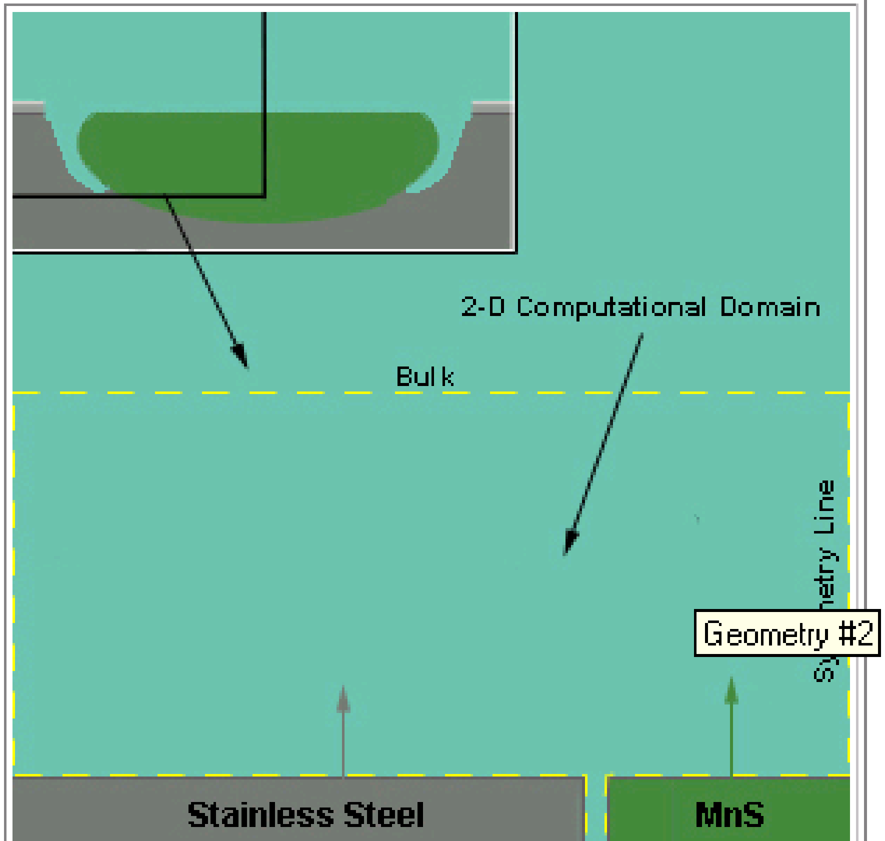
Address https://rcaweb.scs.uiuc.edu/gridsp3/chemistry.pl

Geometry

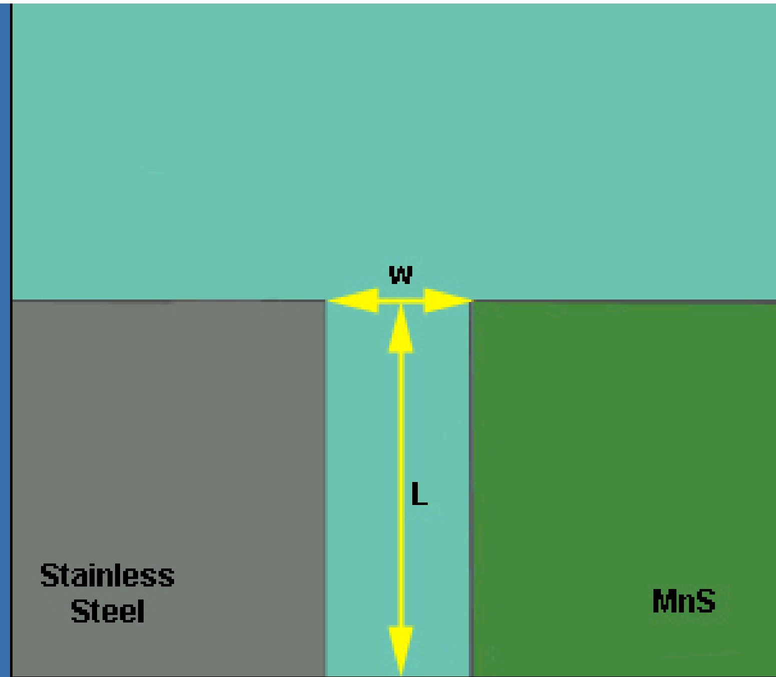
Choose a geometry for the MnS inclusion system:



#1- Microcrevice only



#2- Microcrevice and MnS Inclusion



Geometry #1 - Microcrevice Geometry

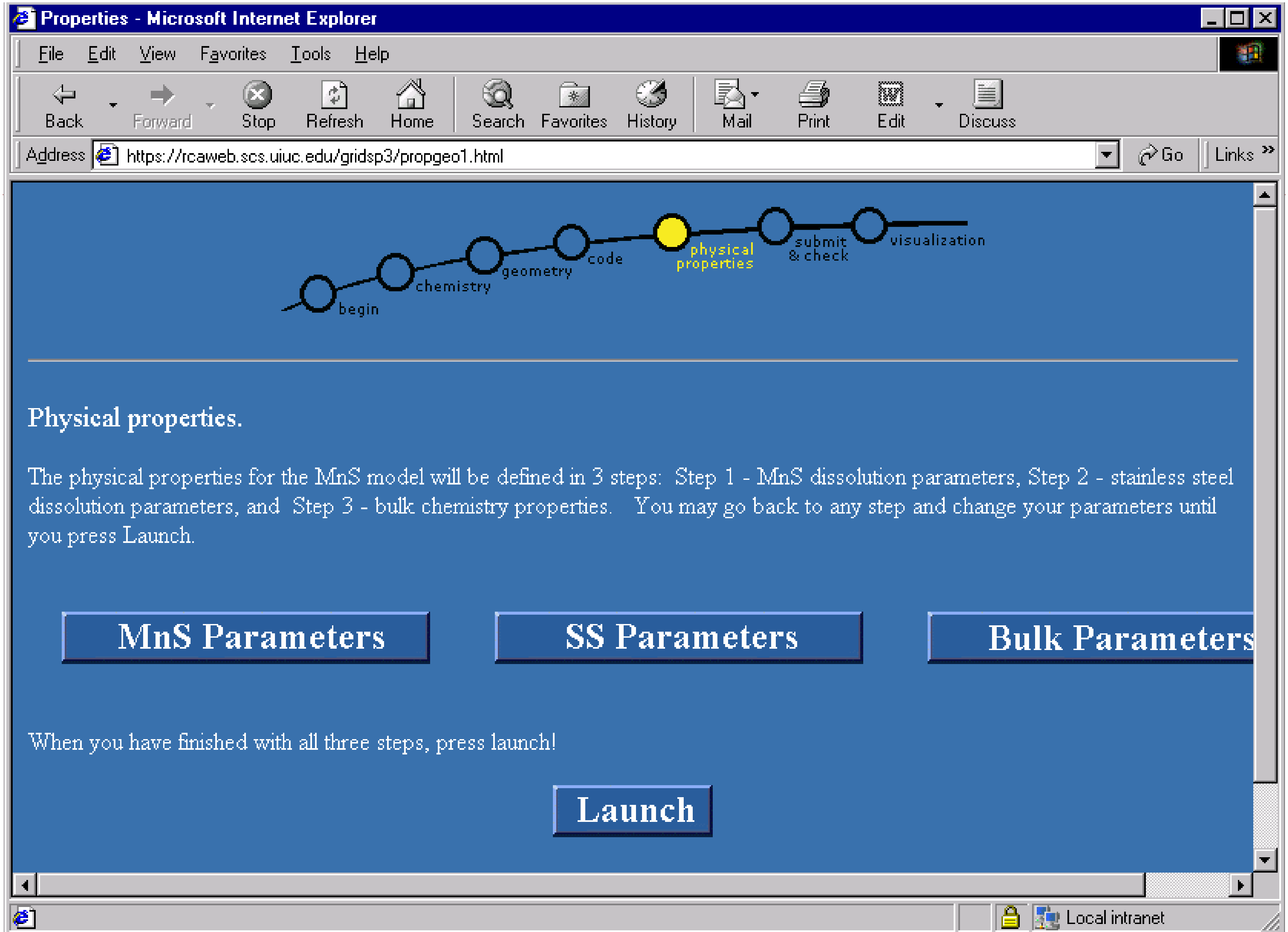
The two important geometric parameters which can be varied for the one-dimensional microcrevice model are the width of the microcrevice, w, and length (or depth) of the microcrevice, L. Please specify the values below. For more information, see Eric Webb's MS Thesis.

Enter the microcrevice length (depth) in µm: 5

Enter the microcrevice width in µm: 0.1

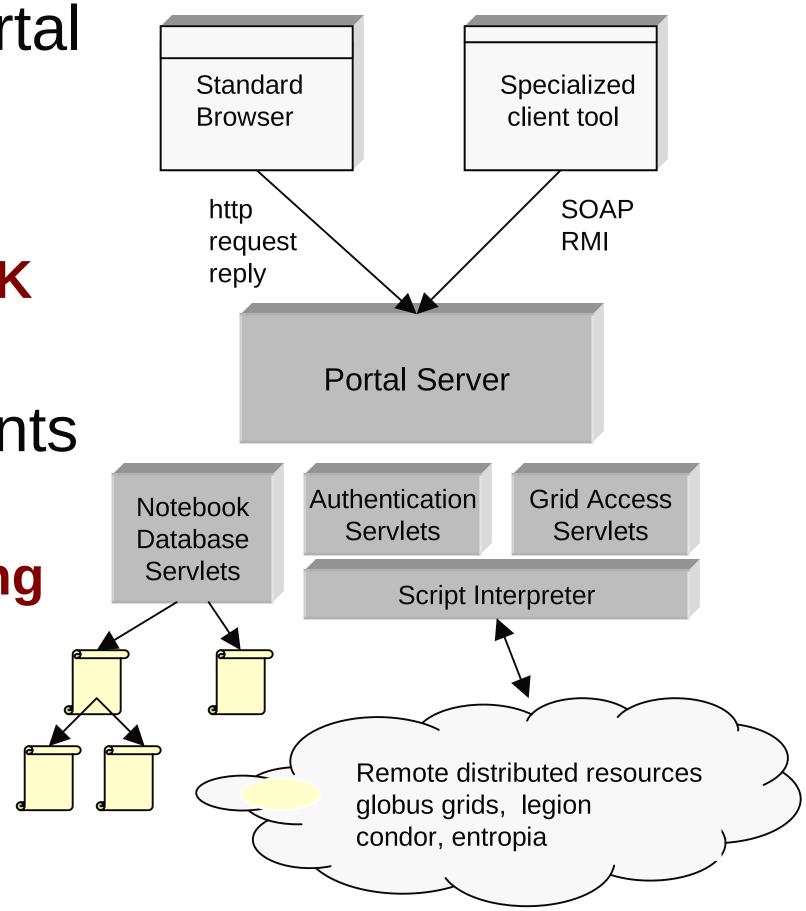
Submit!

Done | Local intranet


Properties - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address https://rcaweb.scs.uiuc.edu/gridsp3/propgeo1.html
Go Links
begin
chemistry
geometry
code
physical properties
submit & check
visualization
Physical properties.
The physical properties for the MnS model will be defined in 3 steps: Step 1 - MnS dissolution parameters, Step 2 - stainless steel dissolution parameters, and Step 3 - bulk chemistry properties. You may go back to any step and change your parameters until you press Launch.
MnS Parameters
SS Parameters
Bulk Parameters
When you have finished with all three steps, press launch!
Launch
Local intranet

Alliance - IU App Portal Notebook

- An extension of User Grid Portal
- A Script Engine
  - **Jpython based script pages**
  - **Scripts can access COG/GPDK to launch jobs, etc.**
- A Database of user experiments
  - **Each session/experiment is saved as a directory containing**
    - Scripts used and parameters
    - output pages
    - user annotations
    - Event log
- Simple Grid Event model based on SOAP.



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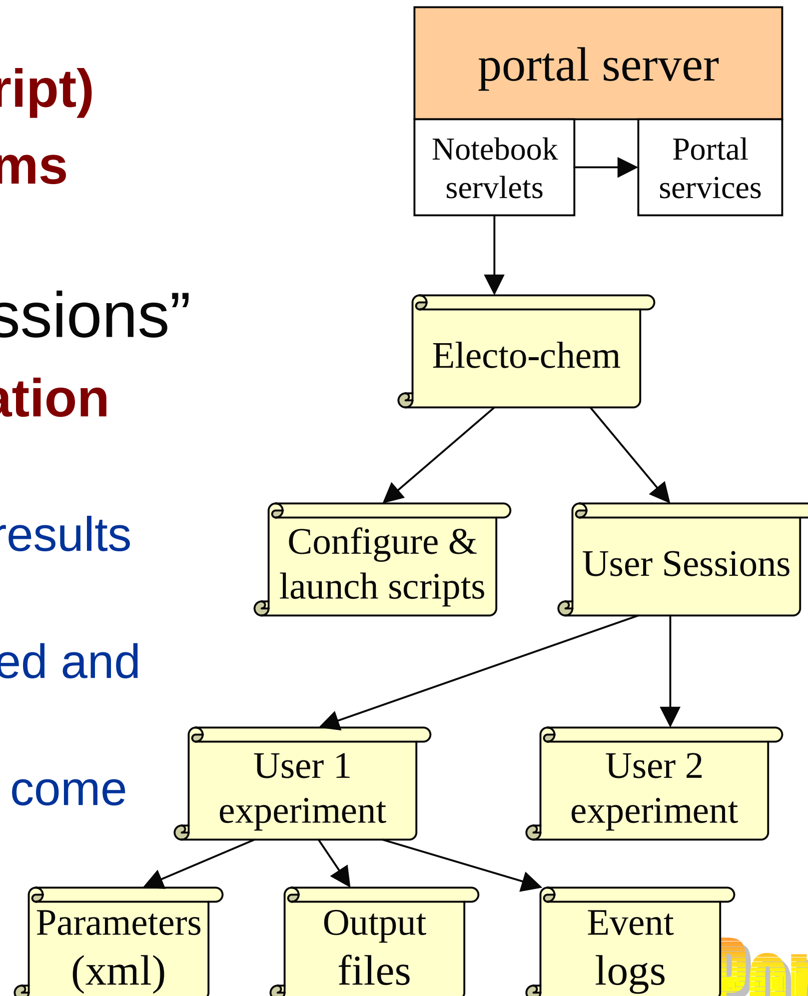
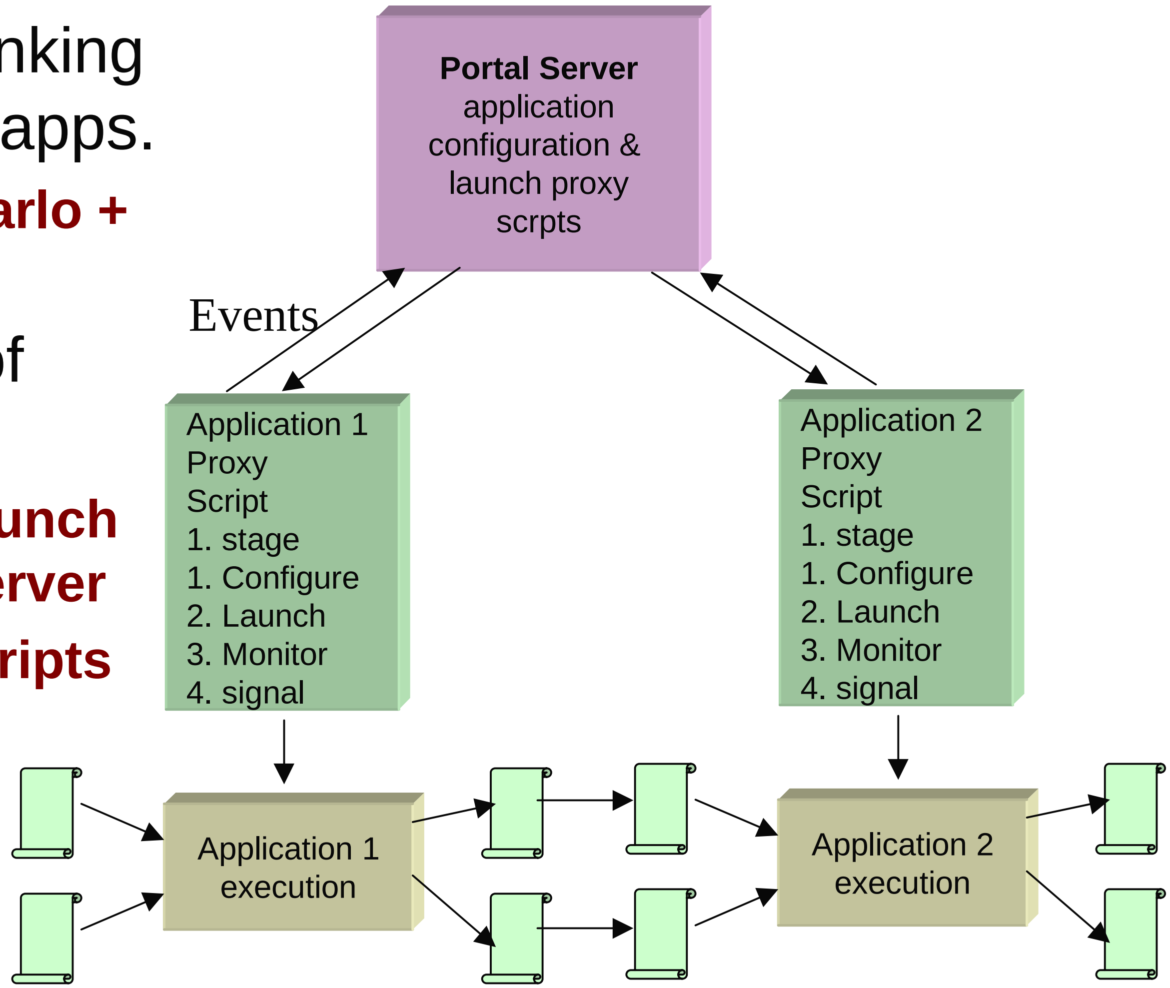
Portal Notebook

- Notebook is a hierarchical directory of
  - **ordinary web pages**
  - **pages with input forms (java script)**
  - **execution scripts (driven by forms pages.)**
- Users of a notebook create "sessions"
  - **A session represents an application execution/experiment.**
    - Including parameter settings and results and event log
    - A session can be revisited, modified and run as a new session.
    - Start running session. Leave and come back later.



Application Scripting

- Some Apps require linking together several sub-apps.
  - **Chem-Eng: monte carlo + Finite Diff codes**
- Requires two levels of scripts
  - **configuration and launch scripts running in server**
  - **application proxy scripts**
    - monitor sub-app
    - send events
    - stage files
  - **event handler scripts**



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Related Projects

- Cactus Portal
  - **A PSE for Grid computing of black hole simulations (and more).**
- Netsolve
  - **Easy to use as a back-end for application portals**
- IPG and NPACI user portals

- …. Now Mary's Demo